

AMENDMENTS TO THE CLAIMS

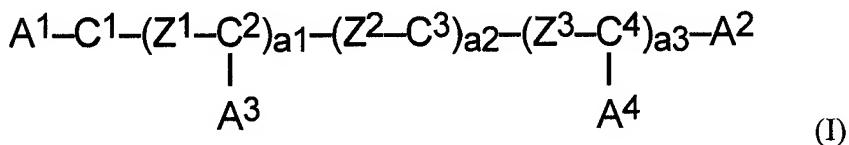
This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (withdrawn-currently amended): A mesogenic, cross-linkable mixture comprising:
 - i) a cross-linkable liquid crystalline host comprising at least one cross-linkable liquid crystalline compound, and
 - ii) at least one chiral or achiral rod shaped additive component, wherein said additive component has a rigid core and comprises at least two fused or linked, optionally substituted, non-aromatic, aromatic, carbocyclic or heterocyclic groups, and also comprises at least one optionally substituted alkyl residue, and at least one polymerizable group and wherein the additive component ~~has a transition temperature changes from the liquid crystalline state~~ to the isotropic state at a temperature of 40 °C or lower.
2. (withdrawn): A mixture according to claim 1, wherein the additive component has a transition temperature to the isotropic state of 20 °C or lower.
3. (withdrawn): A mixture according to claim 1, wherein the additive component has a transition temperature to the isotropic state of 0 °C or lower.
4. (withdrawn): A mixture according to claim 1 having a clearing temperature of 30 °C or higher.
5. (withdrawn): A mixture according to claim 1 having a clearing temperature of 50 °C or higher.

6. (withdrawn): A mixture according to any one of claims 1 to 5, wherein the liquid crystalline host has a clearing temperature of 50 °C or higher.

7. (withdrawn): A mixture according to claim 1, wherein the additive component is a compound of formula (I):



wherein:

A^1 to A^4 are independently from each other hydrogen, a polar group such as nitro, cyano, a halogen, an optionally substituted methyl group, or an optionally substituted hydrocarbon group of 2 to 40 C-atoms, in which one or more C-atoms may be replaced by a heteroatom, in such a way that oxygen atoms are not linked to one another,

with the proviso that at least one of A^1 to A^4 comprises a polymerizable group,

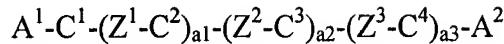
C^1 to C^4 are independently from each other optionally substituted non-aromatic, aromatic, carbocyclic or heterocyclic groups, preferably connected to each other at the opposite positions via the bridging groups Z^1 to Z^3 ,

Z^1 to Z^3 are independently from each other -CH(OH)-, -CO-, -CH₂(CO)-, -SO-, -CH₂(SO)-, -SO₂-, -CH₂(SO₂)-, -COO-, -OCO-, -COCF₂-, -CF₂CO-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH₂-CH₂-, -OCH₂-, -CH₂O-, -CH=CH-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH-, -CH=N-, -C(CH₃)=N-, -N=N- or a single covalent bond,

$a1$, $a2$ and $a3$ are independently from each other integers from 0 to 3, such that

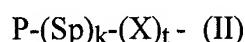
$$1 \leq a1 + a2 + a3 \leq 3,$$

with the proviso that the sequence:



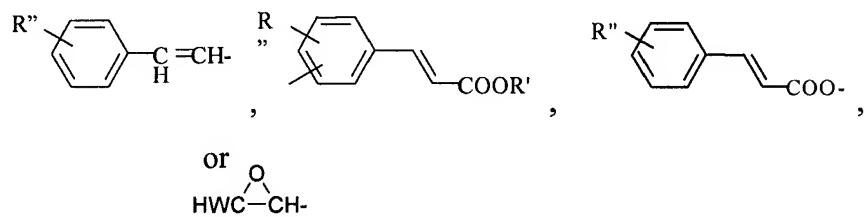
describes the long molecular axis of the rod shaped additive components.

8. (withdrawn): A mixture according to claim 7, wherein the additive component is a compound of formula (I), wherein at least one of A^1 to A^4 includes a polymerizable group, selected from a residue of formula (II):



wherein:

P is hydrogen or a polymerizable group selected from groups comprising $CH_2=CW-$, $CH_2=CW-O-$, $CH_2=CW-COO-$, $CH_2=C(Ph)-COO-$, $CH_2=CH-COO-Ph-$, $CH_2=CW-CO-NH-$, $CH_2=C(Ph)-CONH-$, $CH_2=C(COOR')-CH_2-COO-$, $CH_2=CH-OOC-$, $(Ph)-CH=CH-$, $CH_3-CH=N-(CH_2)_{m1}-$, $HO-$, $HS-$, $HO-(CH_2)_{m1}-$, $HS-(CH_2)_{m1}-$, $HO(CH_2)_{m1}COO-$, $HS(CH_2)_{m1}COO-$, $HWN-$, $HOC(O)-$, $CH_2=CH-Ph-(O)_{m2}$,



wherein:

W is H , F , Cl , Br or I or a C_{1-6} alkyl group,

$m1$ is an integer having a value of from 1 to 9,

$m2$ is an integer having a value of 0 or 1,

R' is a C_{1-6} alkyl group,

R'' is a C_{1-6} alkyl group, methoxy, cyano, F , Cl , Br or I ,

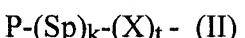
Sp is an optionally substituted straight or branched C₁₋₃₀ alkylene group, in which one or more -CH₂- groups may be replaced by a heteroatom and/or by a polar group and/or it is optionally possible that one or more carbon-carbon single bond(s) is/are replaced by a carbon-carbon double or a triple bond,

k is an integer having a value of from 0 to 4,

X is -O-, -S-, -NH-, -N(CH₃)-, -CH(OH)-, -CO-, -CH₂(CO)-, -SO-, -CH₂(SO)-, -SO₂-, -CH₂(SO₂)-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH₂-CH₂-, -OCH₂-, -CH₂O-, -CH=CH-, -C≡C-, or a single bond,

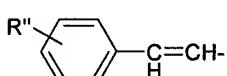
t is an integer having a value of 0 or 1.

9. (withdrawn): A mixture according to one of claims 7 and 8, wherein at least one of A¹ to A⁴ of formula (I) is a group of formula (II):



wherein:

P is a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO- or



wherein:

W is H, CH₃, F, Cl, Br or I,

R'' is a C₁₋₆ alkyl group, methoxy, cyano, F, Cl, Br or I.

Sp is a C₁₋₂₂ branched or straight-chain alkylene group, in which one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO₂-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF₂)_r -,

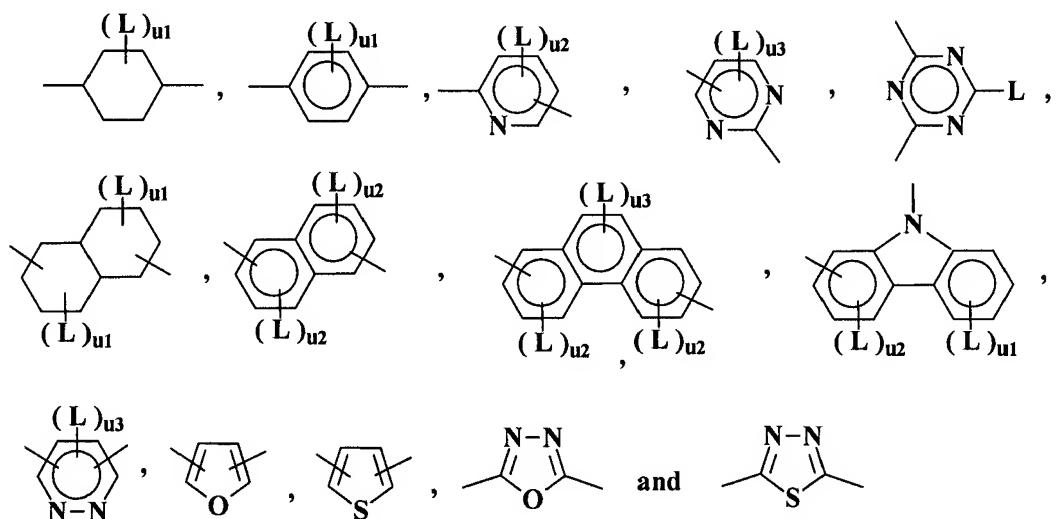
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is $-O-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-C\equiv C-$, or a single bond, more preferably $-O-$, $-COO-$, $-OCO-$ or a single bond,

t is 1.

10. (withdrawn): A mixture according to one of claims 7 and 8, wherein C^1 to C^4 are preferably selected from:



wherein:

L is $-CH_3$, $-COCH_3$, $-NO_2$, $-CN$ or halogen,

$u1$ is 0, 1, 2, 3, or 4,

$u2$ is 0, 1, 2, or 3,

$u3$ is 0, 1, or 2.

11. (previously presented): A mixture according to one of claims 7 and 8, wherein:

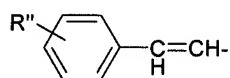
C^1 to C^4 are selected from optionally substituted cyclohexyl or cyclohexylene, phenyl or phenylene, naphthyl or naphthylene or phenanthryl or phenanthrylene,

A^1 to A^4 independently from each other is hydrogen, a polar group such as cyano, nitro, a halogen, or a group of formula (II)

$P-(Sp)_k-(X)_t -$ (II)

in which:

P is hydrogen or a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$, $CH_2=CW-COO-$ or



wherein:

W is H, CH_3 , F, Cl Br or I,

R'' is a C_{1-6} alkyl group, methoxy, cyano, F, Cl, Br or I,

Sp is a C_{1-22} branched or straight-chain alkylene group, in which one or more $-CH_2-$ groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from $-O-$, $-CH(OH)-$, $-SO_2-$, $-COO-$, $-OCO-$, $-OCO-O-$, $-CH=CH-$, $-C\equiv C-$, $-(CF_2)_r-$,

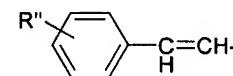
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is $-O-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-C\equiv C-$, or a single bond, more preferably $-O-$, $-COO-$, $-OCO-$ or a single bond,

t is 1,

with the proviso that at least one of A¹ to A⁴ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO- or



wherein:

W is H, CH₃, F, Cl, Br or I,

R'' is a C₁₋₆ alkyl group, methoxy, cyano, F, Cl, Br or I.

12. (withdrawn): A mixture according to one of claims 7 and 8, wherein:

A¹ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO-,

wherein:

W is H or CH₃,

A² has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

in which:

P is hydrogen or a polymerizable group such as
as CH₂=CW-, CH₂=CW-O- or CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least
one oxocarbonyl or carbonyloxy group, or is a straight C₂-C₁₆ alkylene group, comprising at least

one oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1

A⁴ is hydrogen.

13. (withdrawn): A mixture according to one of claims 7 and 8, wherein:

A¹ has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

wherein:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O- or CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least one oxocarbonyl or group, or is a straight C₂-C₁ alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A² comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, or CH₂=CW-COO-,

wherein:

W is H or CH₃,

A⁴ is hydrogen.

14. (withdrawn): A mixture according to one of claims 7 and 8, wherein:

A¹ has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

wherein:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O- or CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C₂-C₁₆ alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A³ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, or CH₂=CW-COO-,

wherein:

W is H or CH₃,

A⁴ is hydrogen.

15. (withdrawn): A mixture according to one of claims 7 and 8, wherein:

A² has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

in which:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O- or CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C₂-C₁₆ alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond,

more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A³ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, or CH₂=CW-COO-,

wherein:

W is H or CH₃,

A⁴ is hydrogen.

16. (withdrawn): A mixture according to one of claims 7 and 8, wherein:

A¹ and A² have the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

wherein:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O- or CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C₂-C₁₆ alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A³ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, or CH₂=CW-COO-,

wherein:

W is H or CH₃,

A⁴ is hydrogen.

17. (withdrawn): A mixture according to one of claims 7 and 8, wherein at least one of A¹ to A³ has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

wherein:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp has the meaning of formula (III)

$$\begin{array}{c} R^1 \\ | \\ (CH_2)^{n^1} - (Y^1)^{m^1} - (CH_2)^{n^2} - (B^1)^{m^2} - (CH_2)^{n^3} - (Y^2)^{m^3} - (CH_2)^{n^4} \\ | \\ R^2 \end{array}$$

(III)

wherein:

Y^1 and Y^2 each independently represent -OCO- or -COO-,

B^1 represents C or CH,

R^1 and R^2 each independently represent hydrogen or a C₁-C₁₂ alkyl residue,

preferably a C₁-C₆ alkyl residue, such as a methyl, ethyl, propyl, butyl, pentyl, hexyl or isopropyl residue,

n_1 , n_2 , n_3 and n_4 are independently integers from 0 to 15, such that $0 \leq n_1 + n_2 + n_3 + n_4 \leq 15$,

m_1 , m_2 and m_3 are independently integers from 0 to 3, such that

$1 \leq m_1 + m_2 + m_3 \leq 3$ and wherein:

one or more -CH₂- groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from -O-, -CH=CH- or -C≡C-,

with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of Y^1 or Y^2 ,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

18. (withdrawn): A mixture according to one of claims 7 and 8, wherein at least one of A¹ to A³ has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

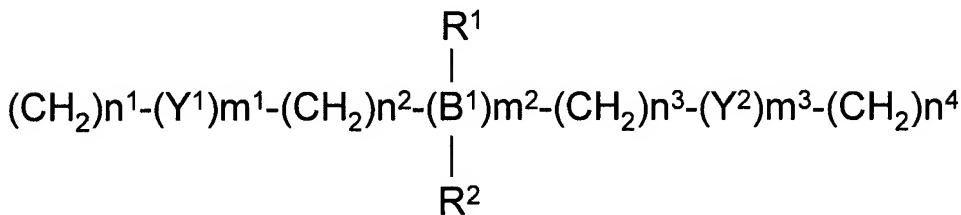
wherein:

P is hydrogen or a polymerizable group such as $\text{CH}_2=\text{CW}-$, $\text{CH}_2=\text{CW}-\text{O}-$,
 $\text{CH}_2=\text{CW}-\text{COO}-$,

wherein:

W is H or CH_3 ,

Sp has the meaning of formula (III)



(III)

wherein:

Y^1 and Y^2 each independently represent $-\text{OCO}-$ or $-\text{COO}-$,

B^1 represents C or CH ,

R^1 is hydrogen

R^2 represents a methyl, ethyl, propyl, butyl, pentyl or hexyl group and most preferably a methyl or ethyl group,

n^1 , n^2 , n^3 and n^4 are independently integers from 0 to 15,

such that $0 \leq n^1 + n^2 + n^3 + n^4 \leq 15$,

m^1 , m^2 and m^3 are independently integers from 0 to 3,

such that $1 \leq m^1 + m^2 + m^3 \leq 3$, and wherein:

one or more $-\text{CH}_2-$ groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from $-\text{O}-$, $-\text{CH}=\text{CH}-$ or $-\text{C}\equiv\text{C}-$,

with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of Y¹ or Y²,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

19. (withdrawn): A mixture according to claim 1 comprising further agents, such as cross-linking agents, stabilizing agents, initiators, dyes, other chiral or achiral additives and plasticizers.

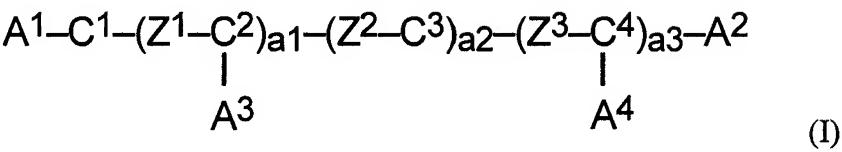
20. (withdrawn): A mixture according to claim 1 in form of an elastomer, polymer gel, polymer network or polymer film.

21. (original): A chiral or achiral rod shaped compound, wherein said compound has a rigid core and comprises at least two fused or linked, optionally substituted, non-aromatic, aromatic, carbocyclic or heterocyclic groups, and also comprises at least one optionally substituted alkyl residue, and also comprises at least one polymerizable group and has a transition temperature to the isotropic state of 40 °C or lower.

22. (original): A compound according to claim 21, wherein the compound has a transition temperature to the isotropic state of 20 °C or lower.

23. (currently amended): A compound according to ~~claims~~ claim 21 and 22, wherein the compound has transition temperature to the isotropic state of 0 °C or lower.

24. (currently amended): A compound according to ~~any one of claims~~ claim 21 and 22 of formula (I):



wherein:

A^1 to A^4 are independently from each other hydrogen, a polar group such as nitro, cyano, a halogen, an optionally substituted methyl group, or an optionally substituted hydrocarbon group of 2 to 40 C-atoms, in which one or more C-atoms may be replaced by a heteroatom, in such a way that oxygen atoms are not linked to one another,

with the proviso that at least one of A^1 to A^4 comprises a polymerizable group,

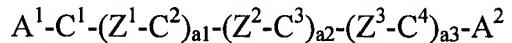
C^1 to C^4 are independently from each other optionally substituted non-aromatic, aromatic, carbocyclic or heterocyclic groups, preferably connected to each other at the opposite positions via the bridging groups Z^1 to Z^3 ,

Z^1 to Z^3 are independently from each other -CH(OH)-, -CO-, -CH₂(CO)-, -SO-, -CH₂(SO)-, -SO₂-, -CH₂(SO₂)-, -COO-, -OCO-, -COCF₂-, -CF₂CO-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH₂-CH₂-, -OCH₂-, -CH₂O-, -CH=CH-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH-, -CH=N-, -C(CH₃)=N-, -N=N- or a single covalent bond,

$a1$, $a2$ and $a3$ are independently from each other integers from 0 to 3, such that

$$1 \leq a1 + a2 + a3 \leq 3,$$

with the proviso that the sequence:



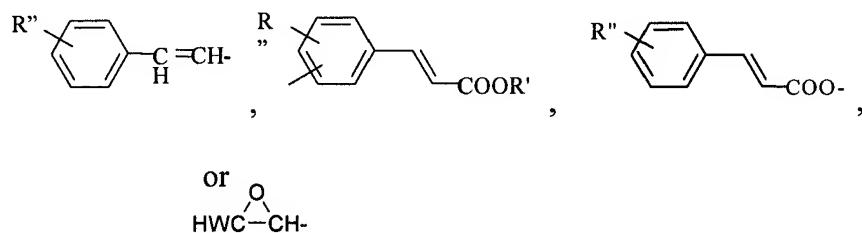
describes the long molecular axis of the rod shaped additive components.

25. (original): A compound according to claim 24, wherein at least one of A^1 to A^4 includes a polymerizable group, selected from a residue of formula (II):

P-(Sp)_k-(X)_t - (II)

wherein:

P is hydrogen or a polymerizable group selected from groups comprising CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO-, CH₂=C(Ph)-COO-, CH₂=CH-COO-Ph-, CH₂=CW-CO-NH-, CH₂=C(Ph)-CONH-, CH₂=C(COOR')-CH₂-COO-, CH₂=CH-OOC-, (Ph)-CH=CH-, CH₃-CH=N-(CH₂)_{m1}-, HO-, HS-, HO-(CH₂)_{m1}-, HS-(CH₂)_{m1}-, HO(CH₂)_{m1}COO-, HS(CH₂)_{m1}COO-, HWN-, HOC(O)-, CH₂=CH-Ph-(O)_{m2},



wherein:

W is H, F, Cl, Br or I or a C₁₋₆ alkyl group,

m1 is an integer having a value of from 1 to 9,

m2 is an integer having a value of 0 or 1,

R' is a C₁₋₆ alkyl group,

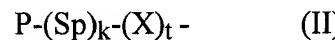
R'' is a C₁₋₆ alkyl group, methoxy, cyano, F, Cl, Br or I,

Sp is an optionally substituted straight or branched C₁₋₃₀ alkylene group, in which one or more -CH₂- groups may be replaced by a heteroatom and/or by a polar group and/or it is optionally possible that one or more carbon-carbon single bond(s) is/are replaced by a carbon-carbon double or a triple bond,

k is an integer having a value of from 0 to 4,

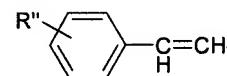
X is -O-, -S-, -NH-, -N(CH₃)-, -CH(OH)-, -CO-, -CH₂(CO)-, -SO-, -CH₂(SO)-, -SO₂-, -CH₂(SO₂)-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH₂-CH₂-, -OCH₂-, -CH₂O-, -CH=CH-, -C≡C-, or a single bond,
t is an integer having a value of 0 or 1.

26. (previously presented): A compound according to claim 24, wherein at least one of A¹ to A⁴ of formula (I) is a group of formula (II):



wherein:

P is a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO- or



wherein:

W is H, CH₃, F, Cl, Br or I,

R'' is a C₁₋₆ alkyl group, methoxy, cyano, F, Cl, Br or I.

Sp is a C₁₋₂₂ branched or straight-chain alkylene group, in which one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO₂-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF₂)_r-,

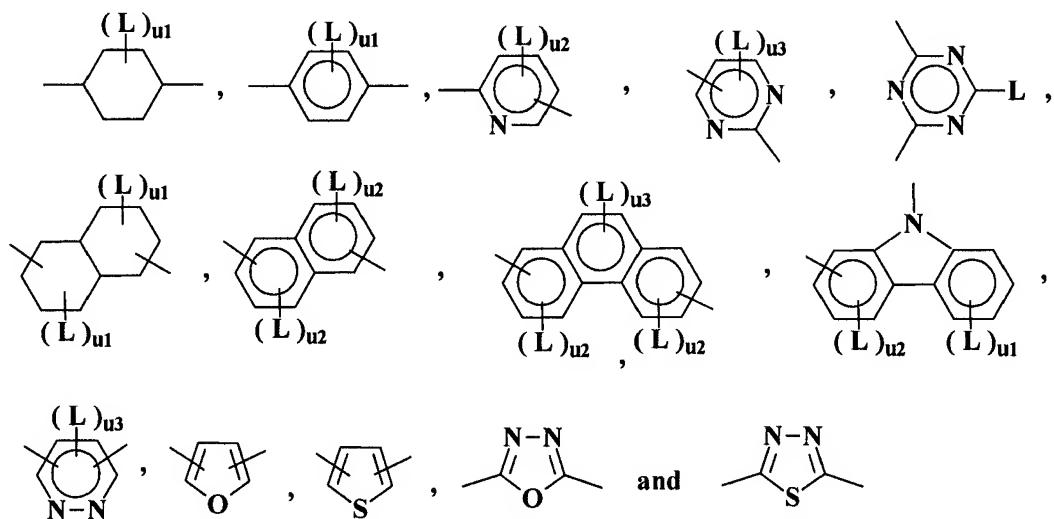
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

27. (previously presented): A compound according to claim 24, wherein C¹ to C⁴ are preferably selected from:



wherein:

L being -CH₃, -COCH₃, -NO₂, -CN or halogen,

u1 is 0, 1, 2, 3, or 4,

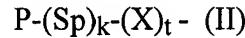
u2 is 0, 1, 2, or 3,

u3 is 0, 1, or 2.

28. (previously presented): A compound according to claim 24, wherein:

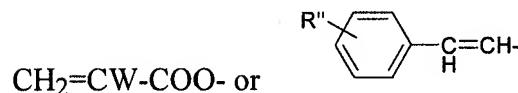
C¹ to C⁴ are selected from optionally substituted cyclohexyl or cyclohexylene, phenyl or phenylene, naphthyl or naphthylene or phenanthryl or phenanthrylene,

A¹ to A⁴ independently from each other is hydrogen, a polar group such as cyano, nitro, a halogen, or a group of formula (II),



in which:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O-,



wherein:

W is H, CH₃, F, Cl Br or I,

R'' is a C₁₋₆ alkyl group, methoxy, cyano, F, Cl, Br or I,

Sp is a C₁₋₂₂ branched or straight-chain alkylene group, in which one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO₂-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF₂)_r-,

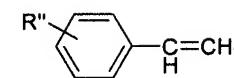
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or single bond,

t is 1,

with the proviso that at least one of A1 to A4 comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO- or



wherein:

W is H, CH₃, F, Cl, Br or I,

R'' is a C₁₋₆ alkyl group, methoxy, cyano, F, Cl, Br or I.

29. (previously presented): A compound according to claim 24, wherein:

A¹ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO-,

wherein:

W is H or CH₃,

A² has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

in which:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O- or CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C₂-C₁₆ alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more
preferably -O-, -COO-, -OCO- or a single bond,

t is 1

A⁴ is hydrogen.

30. (previously presented): A compound according to claim 24, wherein:

A¹ has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

wherein:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=W-O- or
CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp is a branched C₃-C₁₆ alkylene group, optionally comprising at least one
oxocarbonyl or carbonyloxy group, or is a straight C₂-C₁₆ alkylene group, comprising at least one
oxocarbonyl or carbonyloxy group, wherein one or more -CH₂- groups present in the
hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-,
-CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more
preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A^2 comprises a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$, or $CH_2=CW-COO-$,

wherein:

W is H or CH_3 ,

A^4 is hydrogen.

31. (previously presented): A compound according to claim 24, wherein:

A^1 has the meaning of formula (II),

$P-(Sp)_k-(X)_t -$ (II)

wherein:

P is hydrogen or a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$ or $CH_2=W-COO-$,

wherein:

W is H or CH_3 ,

Sp is a branched C_3-C_{16} alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C_2-C_{16} alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more $-CH_2-$ groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from $-O-$, $-CH=CH-$, $-C\equiv C-$, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is $-O-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-C\equiv C-$, or a single bond, more preferably $-O-$, $-COO-$, $-OCO-$ or a single bond,

t is 1,

A^3 comprises a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$, or $CH_2=CW-COO-$,

wherein:

W is H or CH_3 ,

A^4 is hydrogen.

32. (previously presented): A compound according to claim 24, wherein:

A^2 has the meaning of formula (II),

$P-(Sp)_k-(X)_t -$ (II)

wherein:

P is hydrogen or a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$ or $CH_2=CW-COO-$,

wherein:

W is H or CH_3 ,

Sp is a branched C_3-C_{16} alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C_2-C_{16} alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more $-CH_2-$ groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from $-O-$, $-CH=CH-$, $-C\equiv C-$, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is $-O-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-C\equiv C-$, or a single bond, more preferably $-O-$, $-COO-$, $-OCO-$ or a single bond,

t is 1,

A^3 comprises a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$, or $CH_2=CW-COO-$,

wherein:

W is H or CH_3 ,

A^4 is hydrogen.

33. (previously presented): A compound according to claim 24, wherein:

A^1 and A^2 have the meaning of formula (II),

$P-(Sp)_k-(X)_t -$ (II)

wherein:

P is hydrogen or a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$ or $CH_2=CW-COO-$,

wherein:

W is H or CH_3 ,

Sp is a branched C_3-C_{16} alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C_2-C_{16} alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more $-CH_2-$ groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from $-O-$, $-CH=CH-$, $-C\equiv C-$, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is $-O-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-C\equiv C-$, or a single bond, more preferably $-O-$, $-COO-$, $-OCO-$ or a single bond,

t is 1,

A³ comprises a polymerizable group such as CH₂=CW-, CH₂=CW-O-, or CH₂=CW-COO-,

wherein:

W is H or CH₃,

A⁴ is hydrogen.

34. (previously presented): A compound according to claim 24, wherein at least one of A¹ to A³ has the meaning of formula (II),

P-(Sp)_k-(X)_t - (II)

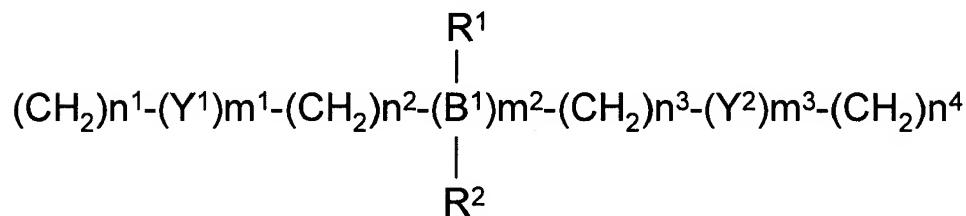
wherein:

P is hydrogen or a polymerizable group such as CH₂=CW-, CH₂=CW-O-, CH₂=CW-COO-,

wherein:

W is H or CH₃,

Sp has the meaning of formula (III)



(III)

wherein:

Y¹ and Y² each independently represent -OCO- or -COO-,

B¹ represents C or CH,

R^1 and R^2 each independently represent hydrogen or a C_1 - C_{12} alkyl residue, preferably a C_1 - C_6 alkyl residue, such as methyl, ethyl, propyl, butyl, pentyl, hexyl or isopropyl residue,

n_1 , n_2 , n_3 and n_4 are independently integers from 0 to 15, such that $0 \leq n_1 + n_2 + n_3 + n_4 \leq 15$,

m_1 , m_2 and m_3 are independently integers from 0 to 3, such that $1 \leq m_1 + m_2 + m_3 \leq 3$ and

wherein one or more $-CH_2-$ groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from $-O-$, $-CH=CH-$ or $-C\equiv C-$, with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of Y^1 or Y^2 ,

k is 1,

X is $-O-$, $-CO-$, $-COO-$, $-OCO-$, $-CH=CH-$, $-C\equiv C-$, or a single bond, more preferably $-O-$, $-COO-$, $-OCO-$ or a single bond,

t is 1.

35. (previously presented): A compound according to claim 24, wherein at least one of A^1 to A^3 has the meaning of formula (II),

$P-(Sp)_k-(X)_t -$ (II)

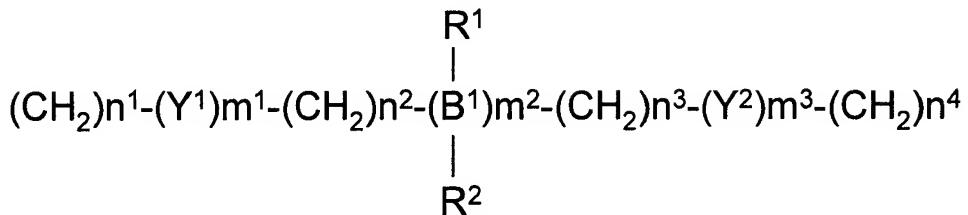
wherein:

P is hydrogen or a polymerizable group such as $CH_2=CW-$, $CH_2=CW-O-$, $CH_2=CW-COO-$,

wherein:

W is H or CH₃,

Sp has the meaning of formula (III)



(III)

wherein:

Y¹ and Y² each independently represent -OCO- or -COO-,

B¹ represents C or CH,

R¹ is hydrogen,

R² represents a methyl, ethyl, propyl, butyl, pentyl or hexyl group

and most preferably a methyl or ethyl group,

n₁, n₂, n₃ and n₄ are independently integers from 0 to 15, such that 0 ≤ n₁ + n₂ + n₃ + n₄ ≤ 15,

m₁, m₂ and m₃ are independently integers from 0 to 3, such that m₁ + m₂ + m₃ ≤ 3, and

wherein one or more -CH₂- groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from -O-, -CH=CH- or -C≡C-, with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of Y¹ or Y²,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

36. (withdrawn): A method of using a chiral or achiral rod shaped compound, comprising preparing mesogenic polymer mixtures according to claim 1 with a chiral or achiral rod shaped compound, wherein said compound has a rigid core and comprises at least two fused or linked, optionally substituted, non-aromatic, aromatic, carbocyclic or heterocyclic groups, and also comprises at least one optionally substituted alkyl residue, and also comprises at least one polymerizable group and has a transition temperature to the isotropic state of 40 °C or lower.

37. (withdrawn): Polymer networks prepared from a mixture according to claim 1.

38. (withdrawn): Liquid crystalline polymer films prepared from a mixture according to claim 1.

39. (withdrawn): A method of using a polymer network or a liquid crystalline polymer film, comprising preparing unstructured or structured optical and electro-optical components and multilayer systems from (A) a polymer network prepared from a mixture according to claim 1 or (B) a liquid crystalline polymer film prepared from a mixture according to claim 1.

40. (withdrawn): A method of using a mesogenic, cross-linkable mixture, comprising preparing an elastomer, polymer gel, polymer network or polymer film from a mesogenic, cross-linkable mixture according to claim 1.

41. (withdrawn): A method of using a polymer network, comprising manufacturing waveguides, optical gratings, filters, retarders, polarizers, piezoelectric cells or thin film exhibiting non-linear optical properties from a polymer network according to claim 37.

42. (withdrawn): Optical or electro-optical components comprising a polymer network according to claim 37.

43. (withdrawn): A method of using a liquid crystalline polymer film, comprising manufacturing waveguides, optical gratings, filters, retarders, polarizers, piezoelectric cells or thin film exhibiting non-linear optical properties from a liquid crystalline polymer film according to claim 38.

44. (withdrawn): Optical or electro-optical components comprising a liquid crystalline polymer film according to claim 38.